

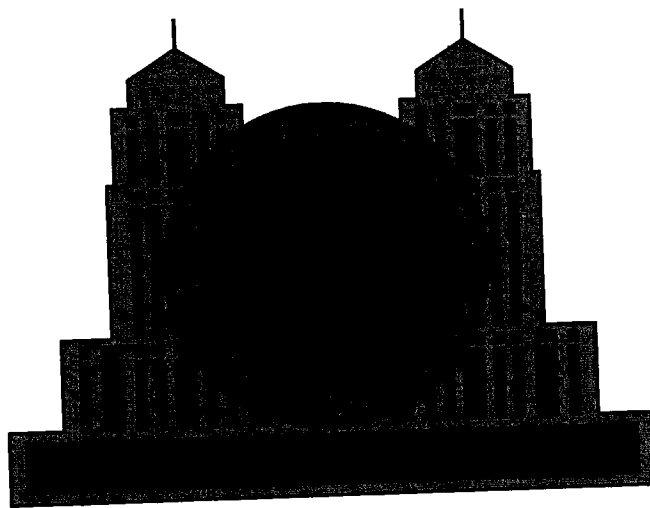


GTF 000009

Geothermal Test Facility

**Oakland Operations Office
Environmental Restoration Program**

**Management Action Process
Document**



April 1996

Table of Contents

<u>Chapter</u>	<u>Description</u>	<u>Page</u>
1.0 Introduction		
1.1	MAP Purpose	1-1
1.2	MAP Organization	1-3
1.3	Project Objectives	1-5
1.4	Project Team Members	1-7
1.5	Project Interrelationships	1-8
1.6	Status of MAP	1-10
1.7	MAP Strategy	1-11
2.0 Installation Description		
2.1	Operational History	2-1
2.2	Environmental Setting	2-4
2.3	Current and Adjacent Site Uses	2-9
2.4	ER Influencing Factors	2-11
2.5	Facilities and Infrastructure	2-12
2.6	Future Facility Use	2-13
3.0 ER Activities		
3.1	Current Overall Status	3-1
3.2	Regulatory Agreements and Other Drivers	3-7
3.3	Material Disposition Activities	3-8
3.4	Project Support Activities	3-9
4.0 Project Relative Risks		
5.0 Project Strategy		
5.1	Key Project Assumptions	5-1
5.2	Remedy Selection Strategy	5-2
5.3	Installation Wide Activity Management Strategy	5-3
5.4	Non-ER Regulatory Strategy	5-5
5.5	Project Support Activity Strategy	5-6
5.6	Performance Measures	5-7
6.0 Master Schedule		
6.1	Master Restoration Schedule	6-1
6.2	Significant Compliance Milestones	6-3
7.0 Issues		
7.1	Issues Affecting Installation Performance	7-1
7.2	Initiatives to Improve Project Performance	7-2

List of Figures

<u>Figure</u>	<u>Description</u>	<u>Page</u>
1.5-1	Organizational Interfaces	1-9
2.1-1	GTF Site Location Map	2-2
2.1-2	GTF Site Map	2-3
2.2-1	Conceptual Hydrogeological Profile	2-6
2.2-2	Topographic Map of GTF Vicinity	2-7
2.2-3	Location of Wetlands Near GTF	2-8
2.3-1	Adjacent Land Use	2-10
3.1-1	Location of ER Activities at GTF	3-5
3.1-2	GTF Environmental Condition of Property Map	3-6
5.6-1	Performance Graphs	5-8
6.1-1	Master Restoration Schedule	6-2

List of Exhibits

<u>Exhibit</u>	<u>Description</u>	<u>Page</u>
1.4-1	Project Team Members	1-7
1.5-1	Project Interrelationships	1-8
2.6-1	Status of Lands	2-13
3.1-1	Release Site Summary Table	3-4
3.3-1	Waste Types and Volumes	3-8
4.1-1	Current Relative Risk Levels at GTF	4-2
6.2-1	Major Milestones	6-3
7.1-1	GTF Funding Levels	7-1

Appendices

<u>Appendix</u>	<u>Description</u>	<u>Page</u>
A	Funding Requirement /Costs	A-1
B	Major Installation ER Documents	B-1
C	Decision Document /Summaries	C-1
D	Conceptual Model Data Summaries	D-1
E	Project Controls	E-1

List of Acronyms

BLM	Bureau of Land Management
CRWQCB	Colorado River Basin Regional Water Quality Control Board
CS ²	Cost Schedule Control System
DOE/Department	Department of Energy
DOE/OAK	DOE/Oakland Operations Office
EE	Office of Energy Efficiency
ER	Environmental Restoration
GTF	Geothermal Test Facility
HQ	Headquarters
MAP	Management Action Process
NEPA	National Environmental Policy Act
PM	Project Manager
PTS	Progress Tracking System
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
S&M	Surveillance and Maintenance
SSI	Small Site Initiative
TDS	total dissolved solids

Chapter 1

Introduction

1. Introduction

A critical mission of the Department of Energy (DOE, or the Department) is the planning, implementation, and completion of environmental restoration (ER) programs at operating and inactive DOE facilities. An integral part of this mission is the safe and cost-effective environmental restoration of the Geothermal Test Facility (GTF), located near El Centro, California. Geothermal research activities at the site were discontinued in 1987. The DOE Oakland Operations Office's (OAK) given mission is to manage, oversee, and complete the ER activities at the GTF site.

The overall mission of the Department's ER Program is to protect human health and the environment from risks posed by inactive and surplus facilities and contaminated areas. DOE's ER program accomplishes this by remediating sites and facilities in the most cost efficient and responsible manner possible to provide for future beneficial re-use. This mission will be accomplished by adhering to the ER Program core values:

- Ensure protection of workers, the public health and safety, and the environment
- Serve as a model steward of natural and cultural resources
- Comply with federal, state, and local statutes
- Use taxpayers' money prudently in achieving tangible results
- Focus on customer satisfaction and collaborative decision making
- Demonstrate a commitment to excellence

This Management Action Process (MAP) document (Document) summarizes the accomplishments and the current status of the GTF ER program and presents a comprehensive strategy for remediation and management of contaminated environmental media and the decommissioning of facilities and structures.

1.1 MAP Purpose

The purpose of the MAP is to assist DOE, contractors, and stakeholders in evaluating and documenting essential decision making information relative to the ER Project at GTF. It provides a means for developing a common understanding of project status and strategy, identifying project improvement or optimization opportunities, setting priorities and sequencing work activities, and identifying local issues. The MAP Process, which includes a review of all ER Program activities at GTF, is a dynamic approach to designing and implementing effective ER strategies. This MAP document provides important, often scattered and diverse project information in a single, all-inclusive format.

The MAP documents results from the process and is intended to be a single, consolidated reflection of all key aspects of the OAK ER program at GTF. It is intended to be a working document to be maintained by the operations office

project manager as reference for the current status of the project. In essence, it is the master document to be continually updated during the course of the project with the most recent, pertinent information. The document will be formally revised annually to incorporate all the changes made during the previous year.

1.2 MAP Organization

The OAK GTF MAP Document is organized into the following areas:

Chapter 1 describes the mission, vision, and objectives of the GTF ER program; the purpose of the MAP; and the organization of the document. This chapter identifies key participants in the MAP, including Department and contractor management and technical personnel, regulators, and stakeholders; addresses the interrelationships of the ER program to other environmental management and Department organizations; and interfaces with regulators, stakeholders, and the public. This chapter also describes the approach for conducting the current MAP and OAK's strategy for incorporating planned adjustments to improve the MAP and future implementation.

Chapter 2 provides a description of the site's operational history and current site natural and physical characteristics, including its environmental setting and facilities, infrastructure, and equipment. This chapter also summarizes local community and regional social, economic, cultural, and ecological factors that significantly influence implementation of ER program at the site. In addition, current and adjacent site uses, planned, proposed, or projected site uses of the land, facilities, and equipment are discussed.

Chapter 3 summarizes information on release sites at GTF, including the status of assessment and remediation efforts, the contaminants of concern, and associated relative risks of the release sites. This chapter summarizes the regulatory drivers of the site and describes waste management, and other significant activities related to the ER Program of the site.

Chapter 4 summarizes the relative risks and associated factors for the ER project.

Chapter 5 examines and describes key project assumptions and the strategy for selection of remedial actions, and presents the installation-wide strategy for managing release sites. This chapter identifies regulatory activities outside the ER Program that might be impediments to completing the project and develops the strategy for overcoming these impediments. It also presents major performance criteria for measuring the success of the ER Program.

Chapter 6 presents a master schedule of planned and anticipated activities to be performed throughout the duration of the ER program and identifies regulatory compliance schedules and milestones.

Chapter 7 identifies specific technical and administrative issues affecting the performance of the ER Program and addresses program impacts and planned or potential resolutions. This chapter also identifies special initiatives at installations that will enhance ER program efficiency.

The appendices in this MAP document are arranged as follows:

Appendix A - Provides current costs and projected budgeted cost information for restoration and compliance projects.

Appendix B - Presents a tabulated summary of ER documents.

Appendix C - Summarizes decision documents and Records of Decision (RODs) for remedial actions or no further action

Appendix D - Presents conceptual models depicting contaminant sources, transport mechanisms, exposure pathways and routes, and receptors for contaminated sites exhibiting high relative ranking.

Appendix E - Summarizes project controls for the ER program, including change control thresholds and reporting requirements.

Chapter 2

Installation Description

2. Installation Description

This chapter summarizes the installation's operational history, environmental setting, facilities and infrastructure, and current and future land use, all of which may influence environmental restoration activities.

2.1 Operational History

The U. S. Bureau of Reclamation initiated studies of the geothermal resources at the GTF site in 1968 as a potential method of augmenting the Lower Colorado River water supply. Operation of experimental desalting plants at the site began in 1972. DOE became the exclusive operator of the site in October 1978. Operation of three pilot-scale geothermal desalting plants were among numerous geothermal research activities performed at the site. The three pilot-scale plants included a vertical tube evaporator, a multi-stage flash evaporator, and a high-temperature electrodialysis unit. The PVC-lined brine holding pond was installed in 1972 to temporarily store and evaporate brine blowdown water as well as untreated brines extracted in the geothermal exploration process.

During site operations from 1972 to 1975, the waste brine was discharged into the holding pond. The disposal capacity of the pond was inadequate to handle increased site activities. Consequently a waste brine injection system was installed in 1976. The holding pond was used intermittently after installation of the injection system, both to supplement the injection system, and to provide for brine storage when the injection system was inoperable. The brine was monitored monthly for dissolved oxygen, total dissolved solids, pH, and conductivity. Geothermal research activities at the site were eventually discontinued by 1987 as commercial-scale geothermal power development matured in the region.

The site's use and configuration have not changed since construction of the site in 1972. Currently at GTF, no active processes or experiments involving DOE research are operating or planned. Figure 2.1-1 is a map showing the location of GTF, and the major features of the GTF site facilities shown in Figure 2.1-2.

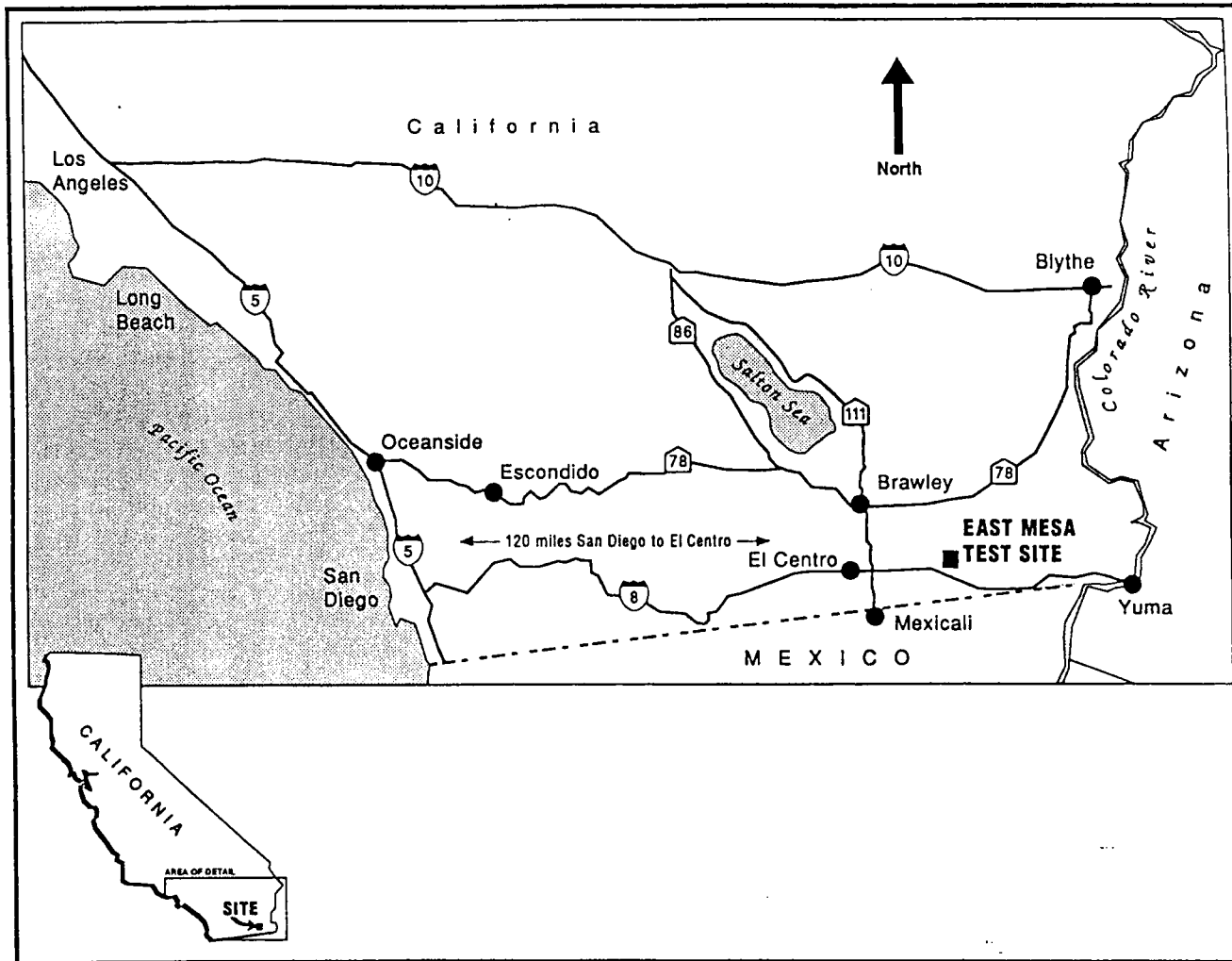


Figure 2.1-1 GTF Site Location Map

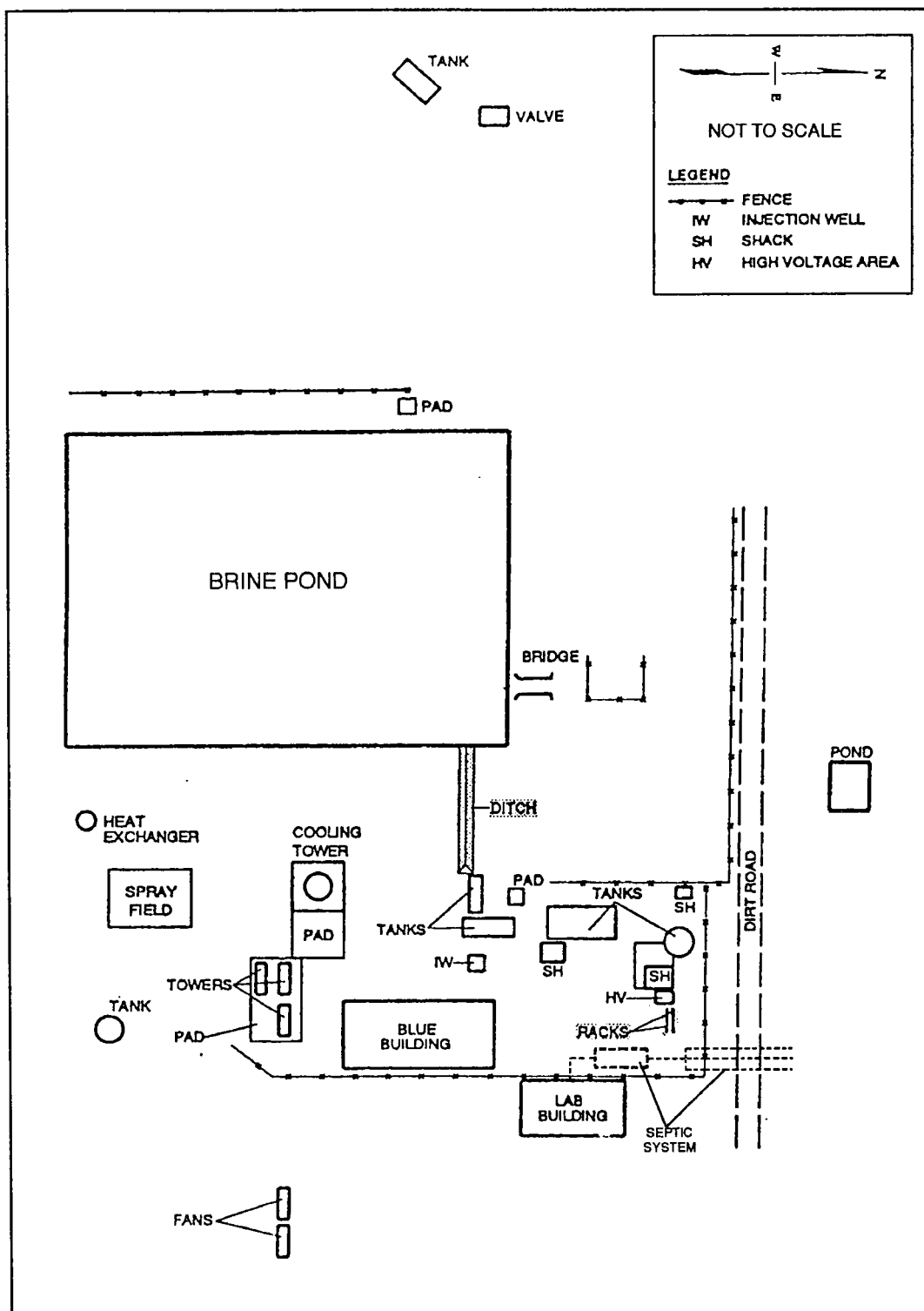


Figure 2.1-2 GTF Site Map

2.2 Environmental Setting

The GTF is an 82 acre site located on the eastern edge of the Imperial Valley in Imperial County, California. The site is 140 miles east of San Diego and 10 miles north of the Mexican border. GTF is also 20 miles east of the town of El Centro and 1.5 miles north of Interstate Highway 8. The location of GTF is shown in Figure 2.1-1. The site is generally flat and is at an elevation of approximately 28 feet above mean sea level.

Broad alluvial fans and plains sloping to playas, creating closed drainage basins that are typically dry, are representative of the area. Frequent faulting in the area causes separation of basin-fill deposits. Surficial deposits are composed of unconsolidated deltaic sand, windblown sand, gravel and silt.

A hydrogeologic study of the area conducted in 1989 (Stollar, 1989) concluded that there were three aquifers known to exist below the site as shown in Figure 2.2-1. Depth to groundwater in the first aquifer ranged from about 10 to 16 feet below the ground surface. Shallow groundwater in the area is of marginal quality and is not beneficially used. A low permeability confining layer less than 200 feet thick underlies the shallow aquifer at a depth of approximately 100 feet below ground surface. This confining layer has discontinuous interbedded sand and gravel lenses. An intermediate aquifer occurs at an approximate depth of 300 feet and extends to approximately 1500 feet below ground surface. The deep geothermal aquifer occurs at approximately 2000 feet.

The general topography of the site is shown in Figure 2.2-2.

Climate

The climate of the GTF area is characterized by an extreme aridity with a yearly mean temperature of 73.1°F and monthly mean temperatures ranging from a low of 55.5°F in January to a high of 92.1°F in July. Mean annual precipitation (entirely as rainfall) recorded over the period of 1951 through 1980 was 2.40 inches, with most rainfall occurring during the spring and fall and almost none during the months of April, May, June, and July. Annual evaporation is extremely high (117 inches) and it exceeds precipitation by about 115 inches per year. Thus, net water movement in any shallow, moist stratum at the site is upward for the entire year.

Vegetation and Wildlife

Vegetation in the area is scarce and consists largely of scattered creosote bushes (*Larrea divaricata*) except along some of the larger washes, where small desert hardwood trees, chiefly paloverde (*Cercidium floridum*) and desert ironwood (*Olneya tesota*) are abundant.

Wetlands

A wetlands area is located approximately 500 feet to the southwest of the site at a topographic low point where the shallow aquifer is intercepted by the ground surface. Figure 2.2-3 shows the approximate location and size of the wetland area. Within this wetland, total dissolved solids (TDS) values ranged from approximately 24,000 to 37,500 mg/L (Stollar, 1989). It has been determined that upward leakage of highly saline deep geothermal fluids is the principal driving force affecting water quality in the intermediate and shallow aquifers.

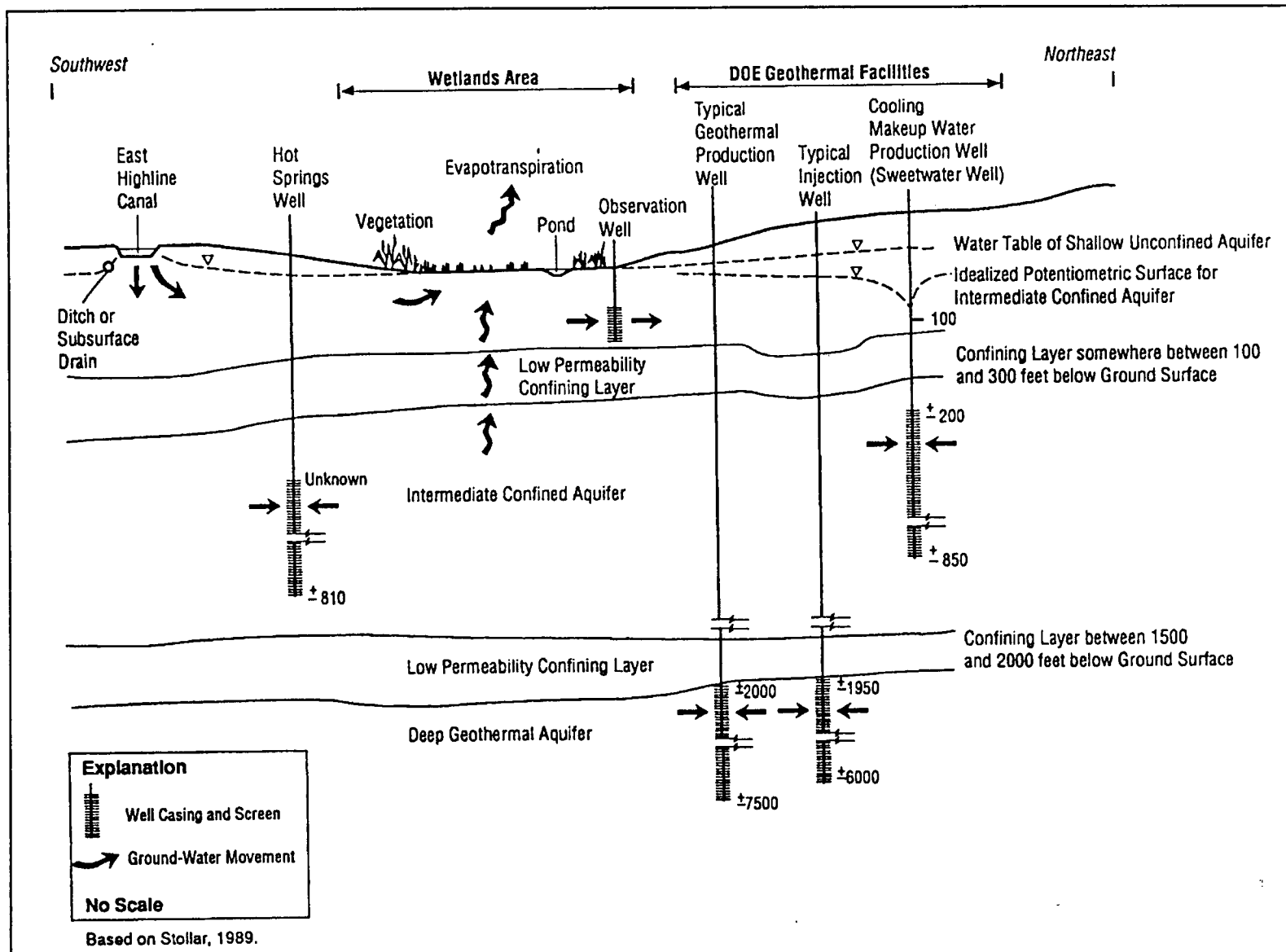


Figure 2.2-1 Conceptual Hydrogeological Profile

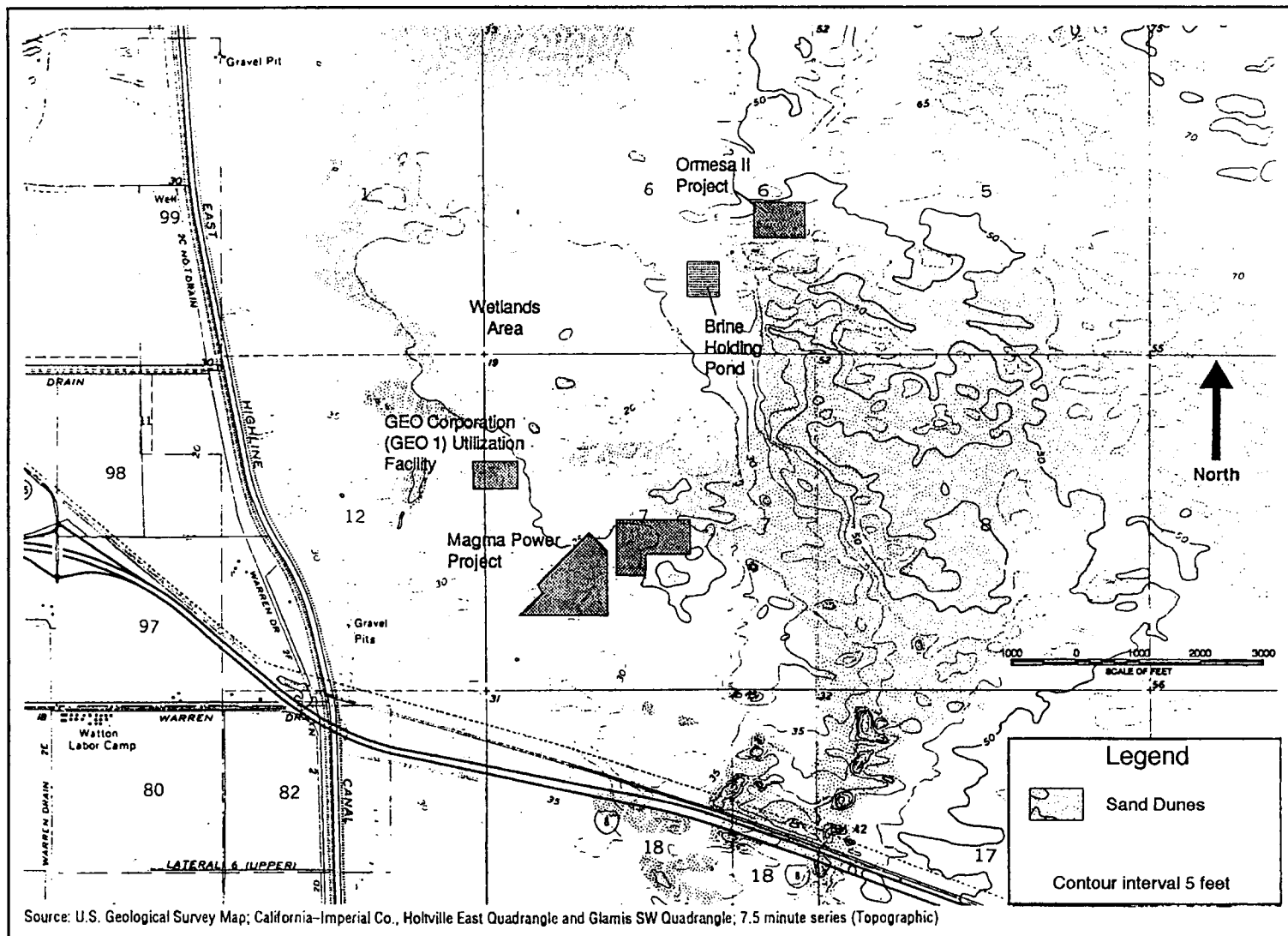


Figure 2.2-2 Topographic Map of GTF Vicinity

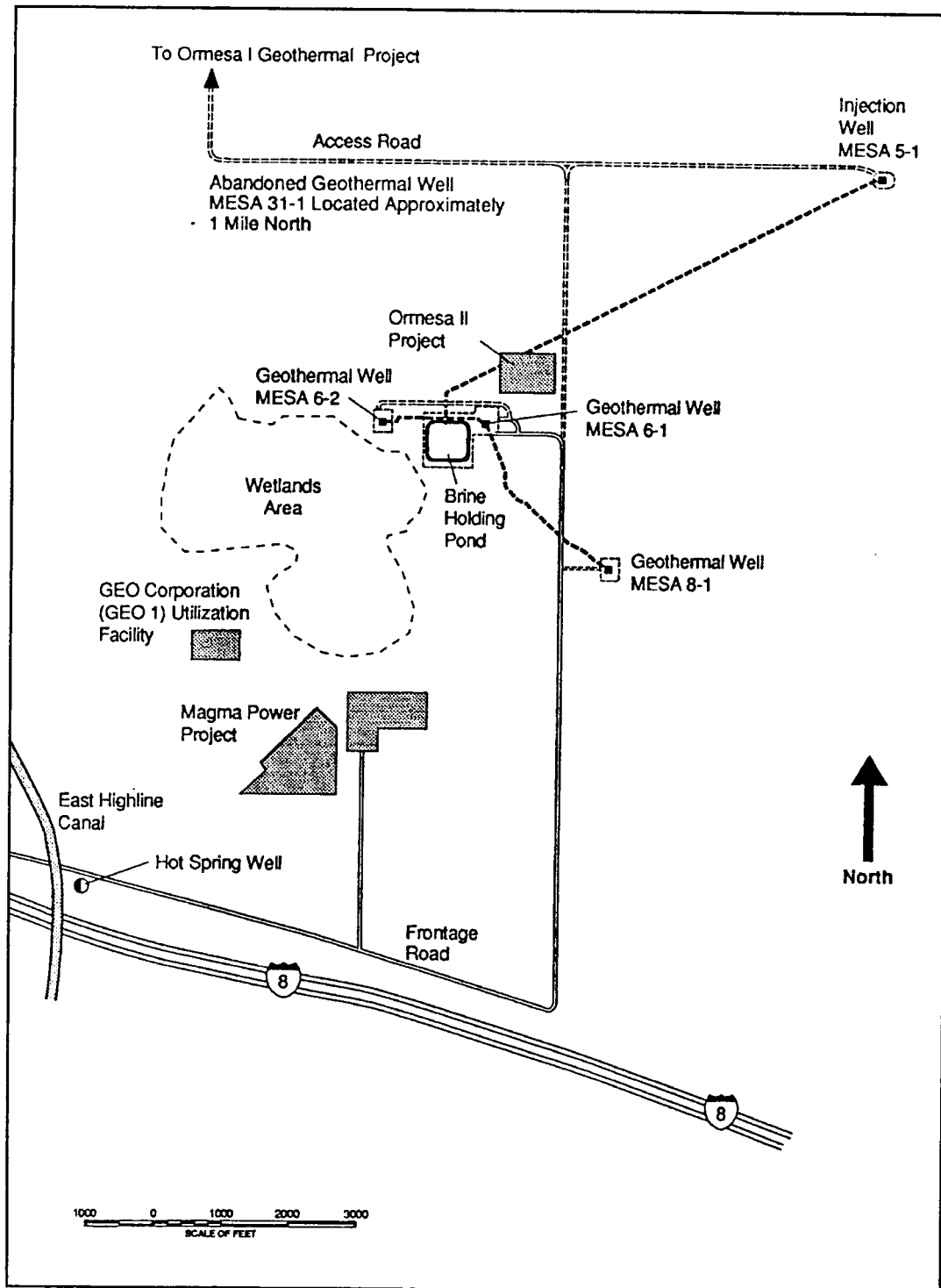


Figure 2.2-3 Location of Wetlands Near GTF

2.3 Current and Adjacent Site Uses

No active processes or experiments involving DOE research are currently operating or planned at the GTF. Sources of contamination are related to past operations. The DOE Office of Environmental Management's future mission is to complete the environmental restoration activities so the site landlord, the EE, may transfer the facility to the U.S. Bureau of Land Management for their unrestricted use. All remaining buildings on the site have been scheduled for Spring 1996 demolition by the EE.

The lands immediately adjacent to GTF are used for commercial geothermal power operations. A wetlands area is adjacent to the western property boundary. The area within a five mile radius of the GTF site is sparsely populated. No contamination is known to have migrated to the groundwater or off the site boundary.

Figure 2.3-1 Adjacent Land Use
(currently not available)

2.4 ER Influencing Factors

Site restoration activities at the GTF are relatively small in total dollar value. Upon completion of the restoration activities, the site landlord will return the site to the BLM for their re-use. The site will essentially be returned in the same condition as it was received by DOE. Therefore, limited economic, social, and cultural impacts are anticipated at this time.

The Brine Pond restoration project requires the removal of approximately 12,000 cubic yards of material from the site for off site disposal. Sensitivity to the impacts on and potential risk to communities along transportation routes and at the ultimate disposal facility will be a consideration. GTF is currently utilized by the Department under the auspices of a Right of Way Agreement with the U.S. BLM for their unrestricted use. It is anticipated that this area will be reserved as a wildlife area upon completion of restoration activities.

A memorandum of agreement (MOA) has been signed between the EE and the Office of Environmental Management. In accordance with the MOA, site restoration activities must be completed in FY1997; however, at this time budget targets will not allow completion of this project in that time frame.

2.5 Facilities and Infrastructure

There are no active utilities at the GTF. A contract to perform site restoration activities is in the final phases of the contract award process. Electricity, water, and other services necessary to perform the environmental restoration activities will be acquired by the contractor after award. Utility services will be acquired from local municipalities at DOE expense. Utility costs are expected to be approximately 3% of overhead costs.

The site landlord, the DOE EE, will assist, as needed, in obtaining necessary utility services. The GTF property is owned by the U.S. BLM and is operated by DOE under a right of way agreement. Upon completion of restoration activities, the site will be returned to BLM for their use in about 1999.

2.6 Future Facility Use

The GTF is currently utilized by DOE under the auspices of a Right of Way Agreement with the U.S. BLM. The DOE future mission is to complete the environmental restoration activities and transfer the facility to the U.S BLM for their unrestricted use. It is anticipated that this area will be reserved as a wildlife area upon completion of restoration activities.

**Exhibit 2.6-1
Status of Lands**

Fiscal Year	Private Lands		DOE Lands				
	Total to be Addressed (Acres)	Total Completed and Released	Total Owned by DOE (acres)	DOE Land to be Retained	Land that has been Released	Remediated and Available for Release	Not Ready to be Released
Pre-FY1995	N/A	0	0				
FY1995	N/A	0	0				
FY1996	N/A	0	0				
FY1997	6	0	0			1	
FY1998	0	6	0				
FY1999							
FY2000							
FY2001							
FY2002							
FY2003							

Chapter 3

ER Activities

3. Environmental Restoration Activities

This section summarizes the status of efforts to remediate release sites. Chapter 3.1 describes the current overall status, accomplishments and environmental condition of the site; Chapter 3.2 summarizes the major regulatory drivers and other legal drivers; waste management and material disposition activities related to ER activities is described in Chapter 3.3; and Chapter 3.4 summarizes other significant activities.

3.1 Current Overall Status

A memorandum of agreement for the transfer of environmental restoration responsibilities from the EE, the site landlord, to EM has been signed. An EM-40 Baseline Change Proposal was submitted in December of 1995 to transfer GTF into the DOE/OAK Major Project Baseline in FY96.

Site investigations have been conducted at GTF. A field investigation report on the brine holding pond was prepared in 1992 by Bechtel Environmental, Inc., for Batelle Environmental Management Operations. A site characterization study on the balance of the site was conducted by Dames & Moore in 1993.

As a result of these investigations, six release sites have been identified for GTF, including:

- a six acre Brine Pond (DOE ER responsibility)
- a septic tank system (DOE ER responsibility)
- a laboratory containing asbestos (DOE EE to complete)
- a shop (DOE EE to complete)
- a cooling tower containing asbestos (DOE EE to complete), and
- piping with asbestos insulation (DOE EE to complete).

Exhibit 3.1-1 summarizes the status of the GTF ER Program

A visual site survey was conducted to identify locations of suspected asbestos containing material in 1992. Nine of eighteen samples collected from the suspected locations tested positive for asbestos. Samples were collected from piping insulation, cooling tower millboard, floor tile and mastic, and various other locations throughout the facility. Several areas contained bagged asbestos and loose asbestos that had a potential to become airborne. These areas were abated and the asbestos was disposed at an off-site commercial disposal facility. Areas that contained non-friable asbestos were not abated and are identified in Exhibit 3.1-1.

Untreated brine extracted during geothermal exploration and brine blowdown water were stored in a holding pond at the facility. Storage of brine in the holding pond resulted in contamination of sediments due to the concentration of

water soluble salts and the precipitation of minerals. On the basis of previous sampling, the quantity of hazardous waste generated from restoration activities is expected to be minimal. Most waste generated as a result of the Brine Pond restoration activities will require disposal at a Class II waste disposal site. All wastes generated from restoration activities, hazardous and non-hazardous, will be disposed off-site at commercial waste facilities permitted for disposal of Class I or Class II waste as appropriate.

A field investigation report on the brine holding pond was prepared in 1992. Assessment activities included grid sampling of the sediment in the Brine Pond. Based on the results of the grid sampling, it was determined that no known RCRA or California "listed" waste were found in the Brine Pond. However, elevated levels of arsenic were found in the Brine Pond sludge. These levels are considered a threat to ground water by the California RWQCB.

No further characterization work will be completed prior to the initiation of remedial action on the Brine Pond. Data reported in the 1992 field investigation has been deemed acceptable. A cleanup schedule is currently being negotiated with the RWQCB. Additional sampling will be required beneath the liner of the Brine Pond once restoration activities have been completed to verify the residual contamination levels. Due to the nature of the site, specifically a combination of a high evaporation rate and an annual precipitation rate of less than three inches, it is highly unlikely that Brine Pond contaminants have migrated past the pond liner.

Sampling will be required to investigate the contents of a septic tank system that is known to be connected to the yellow laboratory building identified in Figure 3.1-1. No as built drawings exist that identify the location of the septic tank or related piping. A work plan will be developed in FY1999 to identify the location of the tank and piping and to determine the types of sampling that will be required. The EE has indicated that they may remove the septic tank prior to FY1999 to facilitate closure of the site.

Figure 3.1-2 presents the "environmental condition" of the property, including areas where no release occurred; areas used for storage but no release occurred; areas where a release occurred but no action is required; areas where a release occurred and remedial action has been completed; areas where a release occurred and an action is underway; areas where a release occurred and remedial action has not yet started; and areas needing additional data. Detailed description of the seven types of "environmental conditions" are summarized below:

1. Areas where no storage, release or disposal of hazardous substances, radiological or petroleum products has occurred (including no migration of these substances from adjacent areas)
2. Areas where only storage of hazardous substances, radiological or petroleum products has occurred (but no release, disposal, or migration from adjacent areas has occurred)

3. Areas where storage, release, disposal, and/or migration of hazardous substances, radiological or petroleum products has occurred, but at concentrations that do not require a removal or remedial action
4. Areas where storage, release, disposal, and/or migration of hazardous substances, radiological or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken
5. Areas where storage, release, disposal, and/or migration of hazardous substances, radiological or petroleum products has occurred, removal and/or remedial actions are under way, but all required remedial actions have not yet been taken
6. Areas where storage, release, disposal, and/or migration of hazardous substances, radiological or petroleum products has occurred, but required response actions have not yet been initiated
7. Areas that are unevaluated or require additional evaluation

**Exhibit 3.1-1
Release Site Summary Table**

Activity Name/Description	Operable Unit No.	Activity Data Sheet	RDS No.	Hazards and Contaminant	Acres/ Volumes	Phase	Relative Ranking	Cleanup Action Completed
BRINE POND	N/A	1489 11	R95D0001	Brine, Arsenic	6 Acres	RI/FS/PP under State Requirements	Medium	Investigation Complete in 1992
SEPTIC SYSTEM	N/A	1489 11	R95D0001	Unknown	Unknown	PA/SI under State Requirement	Not Evaluated	

Cleanup of the following release sites are under the Office of Energy Efficiency, not ER

LABORATORY	N/A	1489 11						
SHOP	N/A	1489 11						
COOLING TOWER	N/A	1489 11						
PIPES (ASBESTOS)	N/A	1489 11						

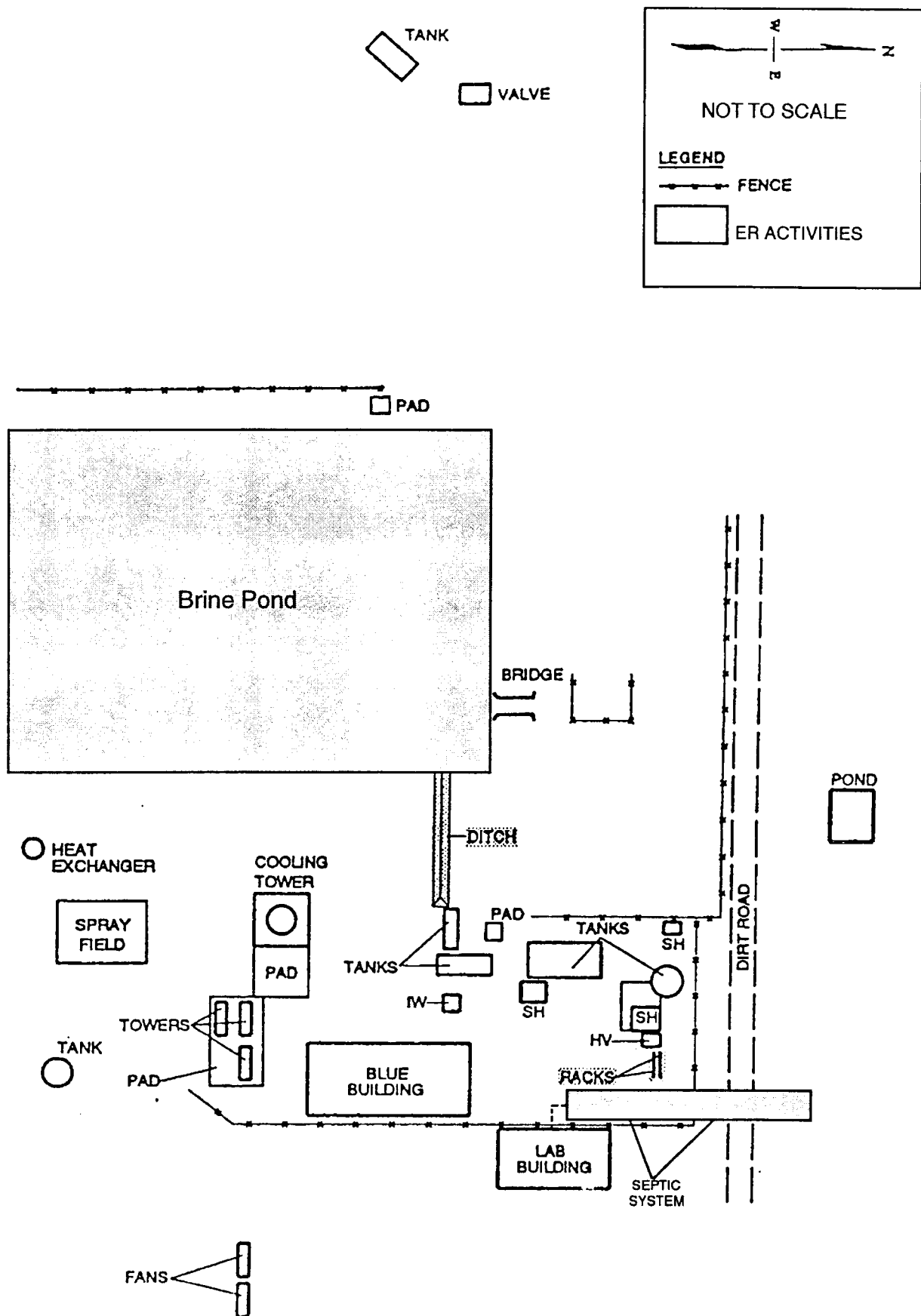


Figure 3.1-1 Location of Environmental Restoration Activities at GTF

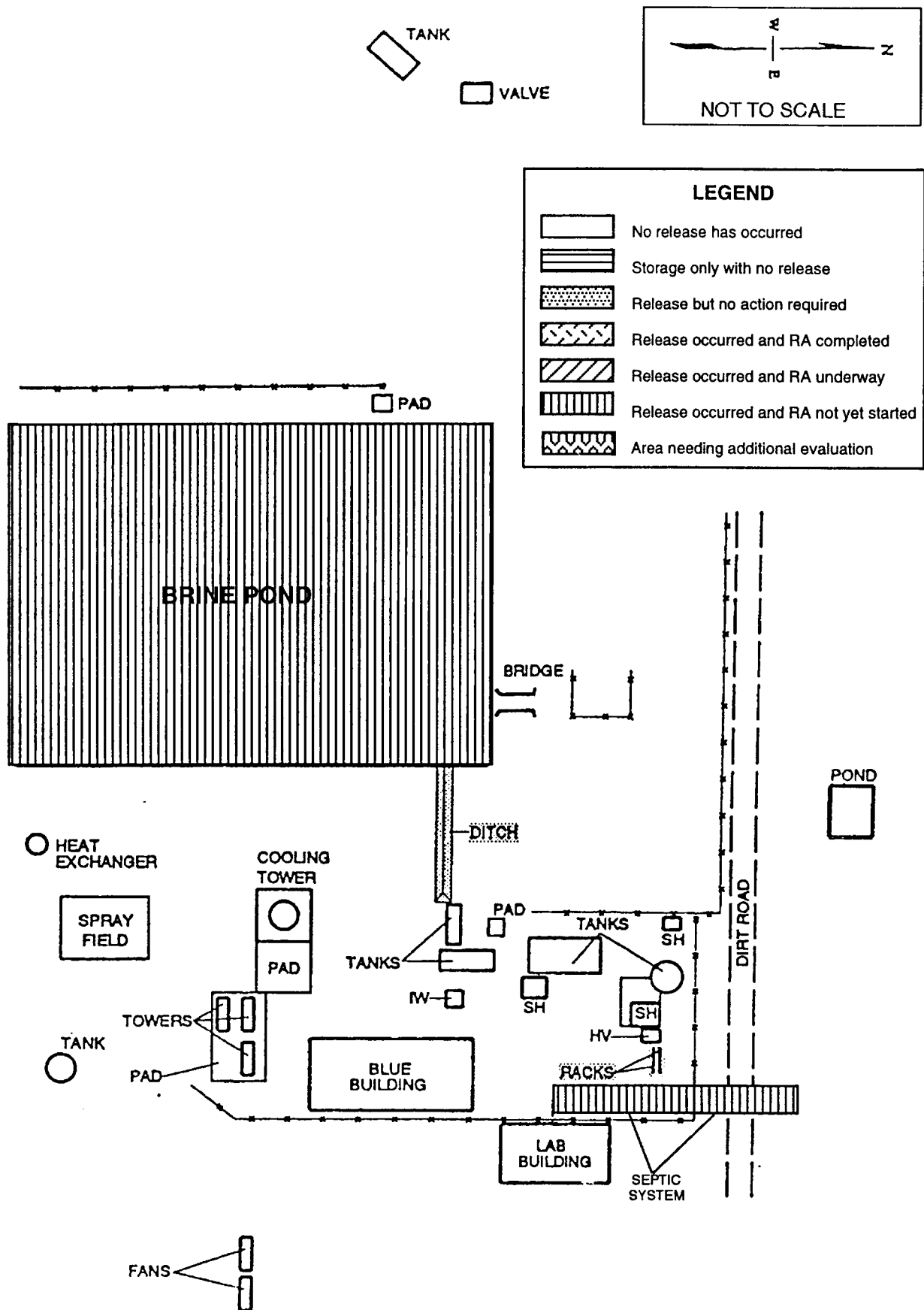


Figure 3.1-2 GTF Environmental Condition of Property Map

3.2 Regulatory Agreements and Other Drivers

Closure of the Brine Pond, asbestos abatement, and removal of the septic tank system will each require interface with regulatory agencies. The Brine Pond closure will be completed under the cognizance of the Colorado River Basin Regional Water Quality Control Board (CRWQCB). Additionally, the asbestos abatement and closure of the septic tank system will require coordination and permits from the Air Quality Control Board and Imperial County respectively.

A Waste Discharge Requirement Order, 89-027, was issued by the CRWQCB in 1989. This order, which was the "permit" to operate, requires the removal and disposal of all geothermal waste to an approved disposal site. As the Brine Pond does not contain any wastes that are considered hazardous under the Resource Conservation and Recovery Act (RCRA) or California designated hazardous waste, the requirements under RCRA Subtitle C are not applicable. Therefore, the CRWQCB is the lead agency for the cleanup effort. Several discussions have taken place between DOE and the water board to evaluate the most effective restoration of the Brine Pond. Other options to excavation and removal off-site were presented to the water board, but were deemed unacceptable. Clean up and Abatement Order 96-023 was issued by the CRWQCB on February 14, 1996, which **requires the excavation and removal of all brine residues.**

Coordination will also be required with the U.S. BLM. DOE utilizes the site under Right of Way agreement CA-5427. In order to terminate the Right of Way agreement, BLM will have to approve and accept the restoration activities that will be completed at the site.

A National Environmental Policy Act (NEPA) categorical exclusion was issued on December 1, 1995. A NEPA categorical exclusion may have to be prepared for restoration activities near the septic tank, if contamination is found.

3.3 Material Disposition Activities

All hazardous and non-hazardous waste generated as a result of this project will be disposed at an off-site approved treatment, storage and disposal facility. No on-site treatment, storage, and disposal requirements are anticipated. Disposal costs will be borne by EM-40.

Generated hazardous waste will be stored in accordance with generator requirements for non-permitted facilities. Any hazardous waste to be generated, by remediation efforts, will be treated and disposed at appropriate off-site commercial facilities. Waste management at the GTF is conducted within the scope of environmental restoration, EM-40. No radioactive waste is currently stored at the site and none will be generated as a result of restoration activities.

The volume of contaminated sediments is estimated at 9,175 cubic meters from the Brine Pond restoration effort. On the basis of previous sampling, the quantity of hazardous waste to be generated from restoration activities is assumed to be minimal. There are no permitted treatment, storage, and disposal facilities at the GTF. The majority of Brine Pond residue will be disposed at an off-site permitted Class II "non-hazardous" disposal facility. Current waste projections for the project are summarized by type and quantity in Exhibit 3.4-1.

**Exhibit 3.3-1
Waste Types and Volumes**

Waste Type	Volume (Cu. Meters)
Non-hazardous Brine Bond Sludge	9187
Hazardous Soil/Debris	762
Asbestos	80

3.4 Project Support Activities

This chapter has been combined with Chapter 5.5 and is presented in Chapter 5.5.

Chapter 4

Project Relative Risks

4. Project Relative Risks

This chapter presents relative risks associated with release sites at GTF based on a qualitative evaluation that considers contaminant hazards, exposure pathways and receptors for the release site.

This chapter presents a grouping of release sites at GTF based on a qualitative evaluation of relative risk that considers the hazards (i.e. sources), exposure pathways, and receptors. The GTF is currently not secured by any fencing. No DOE or contractor personnel are stationed at the site. The site is readily accessible to the public.

There are two sources of contamination at the GTF, the Brine Pond and the septic tank system. A qualitative relative risk designation has been determined based on the DOE Relative Ranking Evaluation Framework for EM-40 Release Sites, Facilities and Buildings and is summarized in Exhibit 4.1-1. In describing current relative risk, three subjective risk levels, high, medium, and low, were used to describe the sites overall risk. Risk levels take into consideration the severity and likelihood of the risk. For exposures to chemical and radionuclide contaminants, the relative risk considers the significance/concentration of the source, the existence or potential for a migration/exposure pathway, and the potential for receptors to have access to the contaminated media.

The septic tank area has not been evaluated for risk as no data is currently available. It has not been determined if the septic tank system has leaked and caused any environmental damage. An investigation will be completed to determine if any contamination does exist and a relative risk ranking will be assigned at that time.

Exhibit 4.1-1 summarizes the relative risk ranking based on California PRG standards which are more appropriate for this site. A significant deviation in the overall relative risk was obtained.

Exhibit 4.1-1

Current Relative Risk Levels at GTF

Release Site	Source Hazard Factor	Pathway Factor	Receptor Factor	Relative Risk
Brine Pond	Moderate	Potential	Potential	Medium
Septic Tank Area	No Data			Not Evaluated

Appendix C
Decision Document/Summaries

DECISION DOCUMENT/SUMMARIES

BRINE POND

DESCRIPTION OF THE SELECTED REMEDY

The Brine Pond restoration remedy: removal, off-site treatment, and disposal at a permitted off-site commercial disposal facility.

The brine pond restoration remedy consists of the following key components:

- Removal of brine pond residues
- Removal of the brine pond liner
- Waste sampling and analysis prior to shipment to ensure the waste meets the acceptance criteria for the selected commercial disposal facility.
- Off-site shipment for disposal at a permitted commercial waste disposal facility. It is estimated that approximately 12,000 cubic yards of waste material will be excavated and disposed as Class II waste.
- Sampling and analysis of the berm material to ensure the berm material is acceptable as brine pond fill.
- Confirmation sampling to determine residual levels beneath the brine pond liner prior to obtaining regulatory closure.
- Import of clean fill (if needed) and placement of berm/fill material into excavated areas.

STATUTORY DETERMINATIONS

The GTF is neither a RCRA nor a Comprehensive Environmental Response Compensation Liability Act site. The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable, **including Clean Up and Abatement Order 96-023 issued by the CRWQCB**, or relevant and appropriate to the remedial action, and is cost-effective. This remedy employs a permanent solution and alternative treatment technologies to the maximum extent practicable.

SEPTIC TANK SYSTEM

DESCRIPTION OF THE SELECTED REMEDY

The Septic Tank restoration remedy: removal, off-site treatment (if needed), and disposal at a permitted off-site commercial disposal facility.

The septic tank restoration remedy consists of the following key components:

- Identification of the location of the septic tank and related piping (to be performed by EE)
- Removal of septic tank system (to be performed by EE)
- Waste sampling and analysis prior to shipment to ensure the waste meets the acceptance criteria for the selected commercial disposal facility (to be performed by EE)
- Characterization of the soil surrounding the septic tank system (to be performed by EE)
- Remediation of contaminated areas (if needed)
- Confirmation sampling to determine residual levels meet regulatory requirements (if needed)
- Import of clean fill and placement of fill material into excavated areas (if needed)

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable, or relevant and appropriate to the remedial action, and is cost-effective. This remedy employs a permanent solution and alternative treatment technologies to the maximum extent practicable.

Only critical information was scanned.

Entire document is
available upon request - [Click here](#) to email a request.